MSIE Industrial Enclosure Manual

Analog and Digital Industrial Enclosures

Version 1.00

Microstar Laboratories, Inc.

Contents

Figures:

Tables:

1. Introductions

Industrial enclosures put the analog and digital expansion boards for Data Acquisition Processor (DAP) boards in compact and controlled packages. The enclosures come in two sizes – full-size and half-size. A full-size industrial enclosure is the industry-standard, rack-mountable chassis. Half-size industrial enclosure models are also available. Figures 1 and 2 show an example of each enclosure.

An industrial enclosure contains a digital or an analog backplane, or both, to which various expansion boards can be connected. Shielded cables then connect the enclosed expansion boards to the DAP board in a PC. As an added benefit, systems using these grounded industrial enclosures and shielded cables comply with EMC Directive 89/336/EEC.

Figure 1. Full-size enclosure

Figure 2. Half-size enclosure

2. Specifications and Characteristics

Physical Characteristics

Dimensions[1]:	448.8 x 132.6 x 358.5 mm	235.4 x 132.6 x 326 mm
(W x H x D)	(17.6 x 5.2 x 14.1 inches)	(9.3 x 5.2 x 12.8 inches)
Weight[2]:	5.9 kg (13.0 lb)	2.5 kg (5.5 lb)
Backplanes	1 full-size or 2 half-size	1 half-size
Expansion slots	20	9

Power Connection

Internal power supply	Optional – 100-240 V~, 1.0A, 50-60 Hz	None
External power supply	Optional – +5VDC to backplane	Optional – +5VDC to backplane

Environmental Characteristics

Operating temperature	0-50 ^{o}C	0-50 ^{o}C

Accessories

Front handles	Removable	Removable
Mounting brackets	Removable	Removable

[1]without front handles or mounting brackets.
[2]without any backplane or interface boards

Basic Models

A full-size enclosure can host an analog backplane, or a digital backplane, or both. Table 1 shows the models available for the full-size and half-size enclosures.

Table 1. Basic models for the enclosures.

Basic Model	Backplane(s)
MSIE001-01	Half-size analog
MSIE002-06	Full-size analog
MSIE003-01	Half-size digital
MSIE004-06	Full-size digital
MSIE005-06	Half-size analog (L) / Half-size digital (R)
MSIE010-06	Half-size analog (L) / Half-size analog (R)
MSIE011-06	Half-size digital (L) / Half-size digital (R)
MSIE012-06	Half-size digital (L) / Half-size analog (R)

Note: "L" means left and "R" means right, with respect to the front of the enclosure.

The enclosures connect to the Data Acquisition Processor board via interface boards – an analog interface board MSXB029 connects to the analog backplane and a digital interface board MSXB033 to the digital backplane. The half-size analog backplane is the MSXB030 and the full-size the MSXB031; The half-size digital backplane is the MSXB033 and the full-size MSXB034.

The interface boards in the basic models shown in Table 1 draw power from the DAP board. If more than 2 Amps is required for the expansion boards, the enclosure will need to be externally powered (i.e. not by the DAP board). Each model of the full-size enclosure has the option of having external power connectors on the backplane or a built-in 5V power supply. The suffix –E is

added to the model number for the external power connectors and –P for the power supply. The –P model is not available for the half-size models.

3. Instructions for Use

Getting Started

An enclosure should be mounted at the mounting brackets or placed on a level surface.

1. Install expansion board(s) into the enclosure. You must be properly grounded when handling the expansion boards. Remove the front panel(s) from the enclosure for the expansion board(s) as needed.

⚠️ Never install or remove a board while the enclosure is powered.

2. Connect power to the enclosure.
   - For the model with internal power (i.e. with the suffix –P in model number), connect the power cord to the back of the enclosure and to the power outlet.
   - For the model with external power connectors (i.e. with suffix –E in model number), connect the external power supply to the bolt or Molex connector on the backplane(s). See the Analog or Digital Backplane Manual for more information.

3. Connect the interface board(s) to the DAP board.
   - An analog interface board, MSXB029, connects to the DAP board using the 68-line cable MSCBL040.
   - A digital interface board, MSXB033, connects to the DAP board via the 100-line cable MSCBL054.

4. Power on the enclosure for the –E or –P model.

⚠️ Always apply power to the enclosure BEFORE powering on the DAP board.

Shutting down

Always disconnect power to the enclosure AFTER powering down the DAP board.

⚠️ Never install or remove a board while the enclosure is powered. Do not disconnect or connect cables between the DAP board and the enclosure while the DAP board or the enclosure is powered.

Cleaning the Enclosure

If the enclosure requires cleaning, follow the instructions below:
1. Remove power from the enclosure.
2. Disconnect from the DAP board. The DAP board must be powered down before the cables are removed.
3. Clean the external surfaces with a soft cloth dampened with a mixture of mild detergent and water.
Make sure that the enclosure is completely dry before reconnecting it to a power source.

⚠️ Do not use too much liquid in cleaning the enclosure. Water can enter the front panels, damaging electronic components on the boards installed.

4. Safety Notices

The enclosure with the internal power supply has been tested to be compliant with EN61326 (1997 w/A1:98, A2:01 & A3:03) Class A and IEC Safety Publication 61010-1. Note the external markings on the enclosure that are described under "Safety Symbols."

⚠ **Warnings**

- The AC power MUST be disconnected before any cover is removed.
- You are responsible for the safety of the power connections when using your external power supply with the –E models.
- The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. You must not negate the protective action by using an extension cord (power cable) without a protective conductor (grounding). Grounding one conductor of a two-conductor outlet is not sufficient protection.
- Only fuses with the required rated current, voltage, and, specified type (normal blow, time delay, etc.) should be used. Do not use repaired fuses or short-circuited fuseholders. To do so could cause a shock or fire hazard.
- Do not install substitute parts or perform any unauthorized modification to the enclosure.
- Do not use the enclosure in a manner not specified by the manufacturer. To do so the protection provided by the enclosure may be impaired.

Safety Symbols
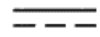
▬▬ Direct Current (DC)
– – –

∿ Alternating Current (AC)

⏚ Ground Symbol – used to indicate a circuit common connected to grounded chassis.

5. Technical Contact

If you have any questions regarding this product, contact us at the following:

Microstar Laboratories
2265 116th Ave NE
Bellevue, WA 98004
Phone: 425-453-2345
Fax: 425-453-3199
Web: www.mstarlabs.com